

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for analysing water chemistry, the apparatus being adapted to operate downhole and comprising:

a flowline for flowing a water sample through;

a colouring agent supply injection device coupled with the flowline and configured for supplying injecting a colouring agent to into a the water sample flowing in the flowline,
the colour of the water sample thus supplied and the injected colouring agent being indicative of the water sample chemistry; and

a colorimetric analyser coupled with the flowline downstream of the colouring agent injection device and arranged to determine the colour of the water sample.

2. (Original) An apparatus according to claim 1 which is installed downhole.

3. (Previously presented) An apparatus according to claim 1 wherein the colorimetric analyser is operably connected to a processor which determines the water sample chemistry from the colour of the water sample.

4. (Previously presented) An apparatus according to claim 1, wherein the colorimetric analyser comprises a spectrometer

5. (Previously presented) An apparatus of claim 1, wherein said apparatus is used for *in situ* analysis of downhole water chemistry.

6. (Currently amended) A method for analysing downhole water chemistry, the method comprising the steps of:

(a) flowing a water sample through a flowline;

(a) (b) supplying injecting a colouring agent to a downhole into the water sample flowing in the flowline, the colour of ~~the~~ a mixture of the water sample and the colouring agent thus supplied being indicative of the water sample chemistry; and

~~(b)~~ (c) determining the colour of the water sample,
wherein steps (a), ~~and (b)~~ and (c) are performed *in situ*.

7. (Currently amended) A method for monitoring contamination of downhole water, the method comprising the steps of:

(a) adding a tracer agent to a fluid which is a potential contaminant of the downhole water,

(b) flowing a sample of the downhole water through a flowline;

~~(b)~~ (c) supplying a colouring agent to a the sample of the downhole water flowing in the flowline, the colour of the water sample mixed with the colouring agent thus supplied being indicative of the presence of the tracer agent; and

~~(c)~~ (d) determining the colour of the water sample,
wherein steps (b), ~~and (c)~~ and (d) are performed *in situ*.

8. (Cancelled)

9. (New) The apparatus according to claim 1, further comprising:

a mixer disposed downstream of the injection device for mixing the water sample and the colouring agent.

10. (New) The apparatus according to claim 9, wherein the mixer comprises a double helix.

11. (New) The apparatus according to claim 1, wherein the colorimetric analyzer comprises a visible spectrum spectrometer.

12. (New) The method according to claim 6, further comprising mixing the water sample and the colouring agent.